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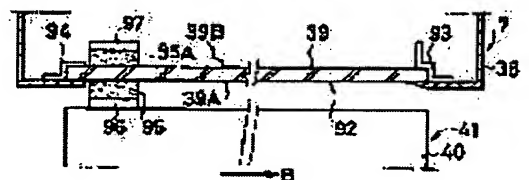
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(54) IMAGE FORMING DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To automatically clean a light transmissive dust-proof member by utilizing the movement of a pullout body by providing a cleaner for a dust-proof member moving with the movement of the pullout body.

SOLUTION: The cleaner for the dust-proof member 95 cleaning the outside surface 39A of the light transmissive dust-proof member 39 is fixed on a unit holder 40 through a magnet 96, and the cleaner for the dust-proof member 95A cleaning the inside surface 39B of the member 39 is opposed to the cleaner 95 through the member 39, and a magnetic body 97 is fixed on the back surface side of the cleaner 95A. When the pullout body is pulled out to a front side shown by an arrow B together with an image carrier unit 41, the cleaner 95 cleans the outside surface 39A of the member 39. At such a time, the cleaner 95A moves in a direction shown by the arrow B together with the cleaner 95 by magnetic force acting between the magnet 96 and the magnetic body 97, and cleans the inside surface 39B of the member 39.



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CLAIMS

[Claim(s)]

[Claim 1] Image support, the electrification equipment charged in this image support, and the aligner which exposes the electrification side and forms an electrostatic latent image in the front face of image support, The developer which forms said electrostatic latent image into a visible image as a toner image is provided. Said aligner In the image formation equipment which has the wrap translucency protection-against-dust member for opening formed in optical system, casing which holds this optical system, and casing along which the light which carries out outgoing radiation from this casing passes Attach said image support to a unit holder, and an image support unit is constituted. When hold this image support unit and said developer on the drawer object supported withdrawal to the body of image formation equipment, and this drawer object is pulled out from the inside of the body of image formation equipment to a near side, or it pushes in in the body of image formation equipment and it contains, Image formation equipment characterized by forming the cleaner for protection-against-dust members which cleans the translucency protection-against-dust member of said aligner which moved in connection with the motion of the drawer object, and was formed in the body side of image formation equipment.

[Claim 2] Image formation equipment according to claim 1 which formed at least two protection-against-dust member cleaners which clean the lateral surface which turned to the exterior of said translucency protection-against-dust member, and the medial surface which turned to the interior of said casing, respectively.

[Claim 3] Image formation equipment according to claim 2 which established a interlocking means to have interlocked and to have moved the cleaner for protection-against-dust members which cleans the medial surface of a translucency protection-against-dust member to a motion of a drawer object when pulling out a drawer object from the inside of the body of image formation equipment to a near side, or pushing in in the body of image formation equipment and containing, while attaching in said image support unit or a drawer object the cleaner for protection-against-dust members which cleans the lateral surface of a translucency protection-against-dust member.

[Claim 4] Image support, the electrification equipment charged in this image support, and the aligner which exposes the electrification side and forms an electrostatic latent image in the front face of image support, In the image formation equipment with which the developer which forms said electrostatic latent image into a visible image as a toner image is provided, and said electrification equipment consists of the corona discharge machine which has charging wire Attach said image support and corona discharge machine to a unit holder, and an image support unit is constituted. When hold this image support unit and said developer on the drawer object supported withdrawal to the body of image formation equipment, and this drawer object is pulled out from the inside of the body of image formation equipment to a near side, or it pushes in in the body of image formation equipment and it contains, Image formation equipment characterized by forming the cleaner for wires which moves relatively [longitudinal direction / the] to said charging wire, and cleans the charging wire concerned in said unit holder in connection with a motion of the drawer object.

[Claim 5] Image formation equipment according to claim 4 which set up the configuration of the cleaner for wires concerned so that this cleaner for wires might clean this grid in slide contact with said grid when said corona discharge machine had a grid and said cleaner for wires moved relatively to said charging wire.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the image formation equipment possessing image support, the electrification equipment charged in this image support, the aligner which exposes the electrification side and forms an electrostatic latent image in the front face of image support, and the developer which forms said electrostatic latent image into a visible image as a toner image.

[0002]

[Description of the Prior Art] The image formation equipment of the above-mentioned format constituted as a compound machine equipped with an electronic copying machine, a printer, facsimile, or these at least two functions etc. is common knowledge from the former. In order to raise the maintenance nature of this image formation equipment, it is advantageous, if image support is attached to a unit holder, an image support unit is constituted and the image support unit and developer are held on the drawer object supported withdrawal to the body of image formation equipment. According to this image formation equipment, an image support unit and a developer are taken out only with pulling out a drawer object from the body of image formation equipment out of the body of image formation equipment, and the maintenance to these can be easily carried out by it. If a drawer object is pushed in in image formation equipment after finishing a predetermined activity, an image support unit and a developer can be positioned to a position, and it can load into the body of image formation equipment. Thus, according to the image formation equipment using a drawer object, the maintenance nature to a developer or image support can be raised.

[0003] By the way, in the image formation equipment of the format indicated at the beginning, it is better known than before to use the aligner which has the wrap translucency protection-against-dust member for opening formed in optical system, casing which holds this optical system, and casing along which the light which carries out outgoing radiation from this casing passes. If dust, such as a toner, adheres to the translucency protection-against-dust member so much when this aligner is used, the quantity of light which results in image support will fall, and the image quality of an image will deteriorate. Therefore, this cleaning is very troublesome although it is sometimes necessary to clean a translucency protection-against-dust member.

[0004] Moreover, it is also common knowledge from the former to use the corona discharge machine which has charging wire as electrification equipment of the format indicated at the beginning. If dust, such as a toner, adheres to the charging wire and this becomes dirty, electrification unevenness will occur in image support and, as for this corona discharge machine, the image quality of an image will deteriorate also by this. Therefore, the cleaning is very troublesome although it is sometimes necessary to also clean charging wire.

[0005] As mentioned above, if the drawer object holding a developer and an image support unit is used, the maintenance nature will be raised, but only by it, since cleaning of a translucency protection-against-dust member and charging wire must be performed separately, high maintenance nature is not expectable.

[0006]

[Problem(s) to be Solved by the Invention] This invention is made based on the above-mentioned recognition, and the 1st object is in offering the image formation equipment which enabled it to clean a translucency protection-against-dust member automatically further using a motion of the drawer object taking advantage of the advantage which used the drawer object.

[0007] Moreover, the 2nd object of this invention is to offer the image formation equipment which enabled it to clean charging wire automatically further using a motion of the drawer object taking advantage of the advantage which used the drawer object.

[0008]

[Means for Solving the Problem] The electrification equipment charged in image support and this image support in order that this invention may attain the 1st object of the above, The aligner which exposes the electrification side and forms an electrostatic latent image in the front face of image support, and the developer which forms said electrostatic latent image into a visible image as a toner image are provided. Said aligner In the image formation equipment which has the wrap translucency protection-against-dust member for opening formed in optical system, casing which holds this optical system, and casing along which the light which carries out outgoing radiation from this casing passes Attach said image support to a unit holder, and an image support unit is constituted. When hold this image support unit and said developer on the drawer object supported withdrawal to the body of image formation equipment, and this drawer object is pulled out from the inside of the body of image formation equipment to a near side, or it pushes in in the body of image formation equipment and it contains, It moves in connection with a motion of the drawer object, and the image formation equipment characterized by forming the cleaner for protection-against-dust members which cleans the translucency protection-against-dust member of said aligner formed in the body side of image formation equipment is proposed (claim 1).

[0009] In that case, if at least two protection-against-dust member cleaners which clean the lateral surface which turned [claim / 1 / above-mentioned] to the exterior of said translucency protection-against-dust member in the image formation equipment of a publication, and the medial surface which turned to the interior of said casing, respectively are formed, it is advantageous (claim 2).

[0010] Furthermore, in image formation equipment given in above-mentioned claim 2, while attaching in said image support unit or a drawer object the cleaner for protection-against-dust members which cleans the lateral surface of a translucency protection-against-dust member When pulling out a drawer object from the inside of the body of image formation equipment to a near side, or pushing in in the body of image formation equipment and containing, it is advantageous if a interlocking means to interlock and to move the cleaner for protection-against-dust members which cleans the medial surface of a translucency protection-against-dust member to a motion of a drawer object is established (claim 3).

[0011] Moreover, the electrification equipment charged in image support and this image support in order that this invention may attain the 2nd object of the above, The aligner which exposes the electrification side and forms an electrostatic latent image in the front face of image support, In the image formation equipment with which the developer which forms said electrostatic latent image into a visible image as a toner image is provided, and said electrification equipment consists of the corona discharge machine which has charging wire Attach said image support and corona discharge machine to a unit holder, and an image support unit is constituted. When hold this image support unit and said developer on the drawer object supported withdrawal to the body of image formation equipment, and this drawer object is pulled out from the inside of the body of image formation equipment to a near side, or it pushes in in the body of image formation equipment and it contains, The image formation equipment characterized by forming the cleaner for wires which moves relatively [longitudinal direction / the] to said charging wire, and cleans the charging wire concerned in said unit holder in connection with a motion of the drawer object is proposed (claim 4).

[0012] When said corona discharge machine has a grid and said cleaner for wires moves relatively to said charging wire in image formation equipment given in above-mentioned claim 4 in that case, it is advantageous, if the configuration of the cleaner for wires concerned is set up so that this cleaner for

wires may clean this grid in slide contact with said grid (claim 5).

[0013]

[Embodiment of the Invention] Hereafter, the example of an operation gestalt of this invention is explained to a detail according to a drawing.

[0014] Drawing 1 is the explanatory view showing the internal structure of the color copying machine which is an example of image formation equipment. When taking a color copy with this color copying machine, a manuscript (not shown) is laid on the contact glass 2 fixed to the upper part of the body 1 of image formation equipment, and the depression of a presser foot and the start switch which is not illustrated is carried out for this by the pressure plate 3. Thereby, the reading optical system 4 operates and a manuscript image is read.

[0015] On the other hand, the image support 5 is arranged and the image support which consists of a drum-like photo conductor is used for the interior of the body 1 of image formation equipment in the illustrated example. Revolution actuation of this image support 5 is carried out at the counterclockwise rotation in drawing 1, and an image support front face is uniformly charged in a predetermined polarity with electrification equipment 6 at this time. In the illustrated example, a corona discharge machine is used as electrification equipment 6, and an image support front face is charged according to the discharge operation.

[0016] An aligner 7 is arranged above the image support 5, and the laser write-in unit is used as this aligner 7 in this example. From this aligner, laser beam L by which light modulation was carried out according to the image information read according to the reading optical system 4 carries out outgoing radiation, the image support front face on which the laser beam L was charged as mentioned above irradiates, and the 1st electrostatic latent image is formed in an image support front face of this. The electrification side of the image support 5 is exposed by the aligner 7, and an electrostatic latent image is formed in an image support front face.

[0017] Next to the image support 5, the developer 8 of a revolution mold is arranged, and this developer 8 has black development counter 8BK, cyanogen development counter 8C, Magenta development counter 8M, and yellow development counter 8Y so that it may mention later. When each development counter has developing-roller 9BK, and 9C, 9M and 9Y and the 1st above-mentioned electrostatic latent image passes along a developer 8, in the 1st development counter and this example, the development location where black development counter 8BK countered image support is occupied, and the 1st electrostatic latent image is formed into a visible image as a black toner image by the black developer which was supported by that developing-roller 9BK and which is not illustrated. Although the fine-particles-like developer of the binary system which has a toner and a carrier is used as a developer, the one component system developer of the shape of fine particles which does not have a carrier etc. can also be used.

[0018] It moves [in / while the medium imprint object 11 which consists of the endless belt of the flexibility almost wound around two or more rollers 10 which contain a driving roller in an image support front face on the other hand is counterposed and revolution actuation of this medium imprint object 11 is carried out in the direction of an arrow head, a part of that front face contacts an image support front face, and / that contact section] in the direction same at the same linear velocity as the linear velocity of an image support front face as the migration direction of an image support front face. The black toner image formed in the front face of this medium imprint object 11 on the image support front face of the discharge operation of the primary imprint equipment 12 which consists of a corona discharge machine is imprinted. Thus, the medium imprint object 11 constitutes the imprint material which has the toner image of an image support front face imprinted from this example.

[0019] The transfer residual toner adhering to the image support front face after imprinting a toner image on the medium imprint object 11 is removed by cleaning equipment 14, subsequently, the image support front face can irradiate light with the electric discharge lamp 15, and the absolute value of the surface potential is lowered to a reference value.

[0020] Next, the 2nd electrostatic latent image is formed in an image support front face completely like the place mentioned above. At this time, the development location where cyanogen development counter

8C countered the image support front face in the 2nd development counter and this example is occupied by revolution of a developer 8, and the 2nd electrostatic latent image is formed into a visible image as a cyanogen toner image by the cyanogen developer supported at that developing-roller 9C. This toner image is also imprinted in the state of superposition from on the black toner image previously imprinted by the front face of the medium imprint object 11. The image support front face after a toner image imprint is cleaned by cleaning equipment 14, and the time of previous actuation and a change do not have receiving an electric discharge operation with the electric discharge lamp 15, either.

[0021] Furthermore, the 3rd and 4th electrostatic latent images by which sequential formation is carried out on an image support front face completely like the place mentioned above With the Magenta developer and yellow developer which were supported by each developing rollers 9M and 9Y of Magenta development counter 8M and yellow development counter 8Y of a developer 8 A visible image is formed one by one as a Magenta toner image and a yellow toner image, and the sequential imprint of these is carried out in the condition of having put on the medium imprint body surface from the toner image imprinted previously. Thus, it is formed in a medium imprint body surface after the toner image of four colors has piled up.

[0022] Opposite arrangement of the secondary imprint equipment 18 which counters the medium imprint object 11, for example, consists of a corona discharge machine on the other hand is carried out, and it is fed with the transfer paper P which is an example of the last imprint material in the direction of arrow-head A from the feed equipment 16 arranged caudad. this transfer paper P -- a resist roller pair -- by the revolution of 17, it is the timing adjusted in the toner image on the medium imprint object 11, and is sent in between secondary imprint equipment 18 and the medium imprint object 11. At this time, the superposition toner image of a medium imprint body surface bundles up, and a discharge operation of secondary imprint equipment 18 imprints on a transfer paper P.

[0023] When the transfer paper P which had the toner image imprinted is supported and conveyed on the conveyance belt 19 and it passes along an anchorage device 20, the transfer paper front face is fixed to the toner image on a transfer paper in an operation of heat and a pressure. Subsequently, the transfer paper is discharged on the paper output tray 21 outside the plane as last copy paper.

[0024] The transfer residual toner adhering to the medium imprint body surface after imprinting a toner image to a transfer paper P is removed from a medium imprint body surface by the cleaning member 23 of cleaning equipment 22. This cleaning member 23 is estranged from a medium imprint body surface, when the toner image on the medium imprint object 11 before imprinting passes along this.

[0025] drawing 2 is the sectional view showing the detail of the revolution mold developer 8, and this developer 8 has the side plate 24 by the side of the back, and side plate 24A (refer to drawing 5 and drawing 7) of a near side, and connects these side plates 24 and 24A with one with a base material 25 -- having -- that both-sides plates 24 and 24A and base material 25 -- the above-mentioned -- each -- development counter 8BK, and 8C, 8M and 8Y are supported removable, respectively. Each development counter has development case 26BK which holds a fine-particles-like developer (not shown), and 26C, 26M and 26Y, respectively. Developing-roller 9BK of the above-mentioned [interior / the], and 9C, 9M and 9Y, It is arranged free [a revolution of 2nd conveyance screw 28BK, and 28C, 28M and 28Y], and doctor blade 29BK, and 29C, 29M and 29Y are placed in a fixed position by each of that development case, respectively. [1st conveyance screw 27BK, 27C, 27M and 27Y and]

[0026] The developer in development case 26BK of development counter 8BK which occupied the development location which countered the image support 5 is conveyed by 1st conveyance screw 27BK from 2nd rotating conveyance screw 28BK, and is supported and conveyed by developing-roller 9BK which the developer rotates clockwise. At this time, the amount of the developer conveyed by doctor blade 29BK is regulated, the developer after regulation is carried between developing-roller 9BK and the image support 5, the toner in a developer shifts to an electrostatic latent image electrostatic here, and that electrostatic latent image is formed into a visible image as a toner image of a predetermined color.

[0027] Moreover, each development counter is equipped with toner cartridge 30BK, and 30C, 30M and 30Y, and the toner of each color is supplied to each development case from each of that toner cartridge.

[0028] The developer 8 mentioned above can be supported by the medial axis 31 free [a revolution],

the base material 25 can rotate it around the medial axis 31, and the development location where each development counter countered the image support 5 can be occupied.

[0029] As shown in drawing 3, on the other hand, cleaning equipment 14 The cleaning case 32, In the cleaning equipment 14 which has the cleaning member which removes the transfer residual toner of an image support front face, and was shown here The cleaning blade 33 to which it was fixed to the cleaning case 32, and the head edge section carried out the pressure welding of the end face section to the image support front face, It is arranged in the cleaning case 32 and the cleaning member which consists of the cleaning brush 34 by which is supported free [a revolution] and revolution actuation is carried out is used for the case. The cleaning case 32 turns the opening 35 to the front face of the image support 5, and is located. The end is fixed to the cleaning case 32, and the sign 36 shows the seal member to which the point contacted the front face of the image support 5 lightly.

[0030] The transfer residual toner removed from the image support front face by the cleaning blade 33 and the cleaning brush 34 is held in the cleaning case 32. At this time, as for opening 35, it is prevented that a seal is carried out by the seal member 36 and the cleaning blade 33, and a toner disperses out of a cleaning case through that opening 35 by them.

[0031] Moreover, as shown in drawing 3, the opening 92 which the aligner 7 constituted as a laser write-in unit has the casing 38 supported by immobilization to the body 1 of image formation equipment, and optical-system elements, such as a laser light source which is not illustrated, a rotating polygon, a f-theta lens, and a reflecting mirror, were held in the interior, and was formed in the casing 38 is closed by the translucency protection-against-dust member 39 which consists of a transparency glass plate or a transparency resin plate. It is prevented that dust, such as a toner and paper powder, invades in casing 38 through opening 92 by this translucency protection-against-dust member 39.

[0032] Through the optical-system component mentioned above, outgoing radiation of the laser beam which carried out outgoing radiation from the laser light source is carried out out of casing 38 through the translucency protection-against-dust member 39, and image formation is carried out to an image support front face. Thus, image exposure of the electrified image support front face is carried out, and the electrostatic latent image corresponding to a picture signal is formed in an image support front face of this.

[0033] As mentioned above, the electrification equipment 6 with which the image formation equipment of this example is charged in the image support 5 and its image support 5, The aligner 7 which exposes the electrification side and forms an electrostatic latent image in the front face of the image support 5, It has the developer 8 which forms an electrostatic latent image into a visible image as a toner image, and cleaning equipment 14 from which the transfer residual toner adhering to the image support front face after imprinting a toner image to imprint material is removed. An aligner 7 Optical system, It has the wrap translucency protection-against-dust member 39 for the opening 92 formed in the casing 38 which holds this optical system, and the casing 38 along which the light L which carries out outgoing radiation from this casing 38 passes.

[0034] Since it is constituted so that the toner image formed in the front face of the image support 5 may once be primarily imprinted on the front face of the medium imprint object 11 and the toner image may be imprinted subsequently to a transfer paper P, the medium imprint object 11 constitutes the imprint material which has a toner image imprinted from the front face of the image support 5 from this example as mentioned above. On the other hand, when it constitutes so that the toner image of an image support front face may be soon imprinted to the last imprint material, for example, a transfer paper, the last imprint material constitutes the imprint material which has the toner image of an image support front face imprinted.

[0035] By the way, the image formation equipment mentioned above carries out maintenance inspection of the image support 5, developer 8, etc., or tends to perform the maintenance of exchanging these and should be constituted.

[0036] Then, in the image formation equipment of this example, as shown in drawing 3 and drawing 4, the image support 5 is attached to the unit holder 40 free [a revolution], the electrification equipment 6 and the electric discharge lamp 15 which are arranged around the image support 5 are also supported by

the unit holder 40, moreover the cleaning case 32 of cleaning equipment 14 is fixed to the unit holder 40, and the image support unit 41 is constituted by these elements.

[0037] The unit holder 40 has the top plate 42 constituted with resin, and the side plates 43 and 44 before and after hanging caudad in the edge before and behind that, and it is supported free [a revolution of the image support 5] so that it may mention later to the both-sides plates 43 and 44. Moreover, as shown in a top plate 42 at drawing 3 and drawing 4 , the opening 53 which leads the laser beam which carried out outgoing radiation from the aligner 7 to an image support front face is formed. Thus, the constituted image support unit 41 is contained removable by the drawer object 45 with which it was equipped free [a drawer] to the body 1 of image formation equipment with the above-mentioned developer 8 as shown in drawing 5 thru/or drawing 7 .

[0038] Drawing 5 pulls out the drawer object 45 from the body 1 of image formation equipment to a near side, and shows the situation when picking out the image support unit 41 from the drawer object 45. Moreover, drawing 6 shows the situation when setting the image support unit 41 to the drawer object 45, and drawing 7 shows the situation when pushing in the drawer object 45 in the body 1 of image formation equipment.

[0039] As shown in these drawings, the drawer object 45 consists of a propleuron 46, an epimeral plate 47, and four the 1st thru/or the 4th stay 48, 49, 50, and 51 of the right and left which connect these side plates 46 and 47 with one, and the central upper and lower sides, and the toner receptacle 52 (drawing 5) attached removable to the drawer object 45 is located in the lower part of the developer 8 supported by this drawer object 45. As shown in drawing 6 , the top plate 42 of the unit holder 40 is laid on the 1st and 2nd stay 48 and 49, and the image support unit 41 is supported by the drawer object 45. Side plates 46 and 47 and the 1st thru/or the 4th stay are constituted by the high rigidity ingredient, for example, a metal plate.

[0040] Moreover, as shown in drawing 7 , as for the medial axis 31 of a developer 8, the edge by the side of the back is supported by the epimeral plate 47 of the drawer object 45 free [a revolution] through the bearing material 63. The bearing material 63 fits into the hole 76 formed in the epimeral plate 47 with some play. Moreover, the edge of the near side of a medial axis 31 is supported by the propleuron 46 of the drawer object 45 free [a revolution] through bearing 64, and the knob 65 is being fixed to the medial-axis edge of a near side removable rather than the propleuron 46. Although drawing 7 has shown the condition that developing-roller 9BK [of black development counter 8BK], 1st, and 2nd conveyance screw 27BK(s) and 28BK were attached to side plates 24 and 24A and a base material 25, the graphic display of other development counters is omitted.

[0041] As shown in drawing 5 , where the drawer object 45 is pulled out to a near side, in the example of the development counter located in the upside, and drawing, black development counter 8BK can be removed from a base material 25, or the base material 25 can be equipped with this. By rotating a base material 25, one of development counters can be located in an upside, the development counter can be lifted up, and it can secede from a base material 25 from the development counter concerned, or can equip with this.

[0042] As shown in drawing 7 and drawing 8 , predetermined spacing is opened in the 1st and 3rd stay 48 and 50, notching 54 is formed, the minor diameter neck of the stop pins 57 and 58 prepared in the movable guide rails 55 and 56 engages with these notching 54 free [attachment and detachment], and the drawer object 45 is supported by the movable guide rails 55 and 56 by this. Moreover, these movable guide rails 55 and 56 have fitted in free [the slide to the fixed guide rails 61 and 62 fixed to the propleuron 59 and epimeral plate 60 of the body 1 of image formation equipment]. Thus, the drawer object 45 is supported by the near side free [a drawer] to the body 1 of image formation equipment.

[0043] Since the drawer object 45 was supported by engaging with the stop pins 57 and 58 in which the notching 54 formed in the 1st and 3rd stay 48 and 50 as mentioned above was formed by the movable guide rails 55 and 56 removable, if the drawer object 45 is pulled out to a near side, the drawer object 45 can be lifted up easily, and it can remove from the movable guide rails 55 and 56.

[0044] Moreover, as shown in drawing 8 , few clearances delta are opened in the minor diameter neck of notching 54 and the stop pins 57 and 58. Since Clearance delta is opened as mentioned above when

setting the drawer object 45 in the body 1 of image formation equipment so that it may mention later, and positioning the drawer object 45 to the body 1 of image formation equipment, the drawer object 45 can be positioned to the body 1 of image formation equipment convenient.

[0045] The cylinder-like support body 66 with which the image support 5 has a sensitization layer on a front face on the other hand as shown in drawing 7, It consisted of the flange material 67 and 68 fixed to longitudinal direction each of that edge, and the annular flanges 67A and 68A which protruded on each of that flange material 67 and 68 have fitted into the slots 69 and 70 formed in the side plates 43 and 44 before and behind the unit holder 40 free [a revolution] with some play. Thus, the image support 5 is attached to the unit holder 40 free [a revolution].

[0046] As shown in drawing 6 and drawing 7, where the drawer object 45 is equipped with the image support unit 41 and a developer 8 If the drawer object 45 is pushed in in the direction of arrow-head C in the back side of the body 1 of image formation equipment, i.e., drawing 7 The point of the driving shaft 72 supported by the epimeral plate 60 of the body 1 of image formation equipment free [a revolution] through the ball bearing of the bearing material 71 and a couple The feed hole of the plain bearing 73 fixed to the epimeral plate 47 of the drawer object 45 is entered, the point fits into the feed hole 74 formed in the flange material 68 by the side of the back of the image support 5 further, and the engagement piece 75 fixed to the driving shaft 72 engages with a feed hole 74. The gear tooth is formed in the engagement side of the engagement piece 75 and a feed hole 74, respectively so that these may be engaged strongly. At this time, boss section 71A of the bearing material 71 fits into the feed hole of a plain bearing 73, and the back side of the drawer object 45 is positioned by this to the body 1 of image formation equipment. Simultaneously, the peripheral face of one ball bearing 71B of the ball bearings of the couple which supports a driving shaft 72 free [a revolution] to the bearing material 71 fits into hole 70A formed in the side plate 44 on the backside [the unit holder 40]. Thereby, the part by the side of the back of the image support unit 41 is positioned.

[0047] On the other hand, the back side edge section of the medial axis 31 of a developer 8 fits into the bearing 77 prepared in the epimeral plate 60 of the body 1 of image formation equipment free [a revolution].

[0048] Moreover, when the drawer object 45 is pushed in in the body 1 of image formation equipment as mentioned above, the tooling holes 78 formed in the propleuron 46 of the drawer object 45 and other tooling holes which are not illustrated fit into the gage pin 79 which protruded on the propleuron 59 of the body 1 of image formation equipment, and other gage pins which are not illustrated, respectively, and the drawer object 45 is positioned to the body 1 of image formation equipment. Subsequently, it fixes with the screw thread which is not illustrating the propleuron 46 of the drawer object 45 to the propleuron 59 of the body 1 of image formation equipment, and the positioning support shaft 81 is inserted in the hole 91 formed in the propleuron 46 of the drawer object 45, hole 40A formed in the side plate 43 of the unit holder 40, and the feed hole 80 formed in the flange material 67 of the near side of the image support 5. Thus, the part of the near side of the image support 5 and the image support unit 41 is positioned. Although it can rotate freely to this shaft 81 on the positioning support shaft 81, the immobilization knob 82 is attached in shaft orientations. Moreover, spring 81A for forcing the flange material 67 of the near side of the image support 5 on the backside is prepared in this positioning support shaft 81, and fitting of the feed hole 74 of the flange material 68 on the backside is carried out to the engagement piece 75 by this. In addition, drawing 7 shows the condition of the midst which the drawer object 45 is moving to the back side, and at this event, although the positioning support shaft 81 is not attached, it shows for convenience the condition of explanation that this support shaft 81 was attached at drawing 7.

[0049] The image support unit 41 and developer 8 which contain the image support 5 as mentioned above are positioned by the position to the body 1 of image formation equipment. In this condition, revolution actuation is carried out, that revolution is told to the image support 5 by the driving gear which the gear 83 fixed to the driving shaft 72 is not illustrating, and the image support 5 rotates with it. Moreover, a developer 8 and each of its element are also driven as mentioned above with the driving gear which is not illustrated.

[0050] When it is necessary to remove the image support unit 41 and a development counter, the positioning support shaft 81 is removed, after removing the screw thread which fixes the propleuron 43 of the drawer object 45, the drawer object 45 is pulled out in the direction of arrow-head B in a near side, i.e., drawing 7 , and it is made to stop with the stopper which is not illustrated here in the location shown in drawing 5 . Thereby, the image support unit 41 and the development counter for which it asks can be lifted up, and it can remove from the drawer object 45. Moreover, the whole developer 8 can also be removed from the drawer object 45 by removing a knob 65 from the medial axis 31 of a developer 8.

[0051] As mentioned above, the image support 5 is attached to the unit holder 40, the image support unit 41 is constituted, and since the image support unit 41 and developer 8 were held on the drawer object 45 supported withdrawal to the body 1 of image formation equipment, ejection or this can be easily set for the image support 5 with the unit holder 40. Moreover, in this example, since a developer 8 and each of its development counter were also worn to the drawer object 45 and it attached removable, these can also set removal or this from the drawer object 45 easily. While the operator had stood on the front-face [of the drawer object 45], or side-face side, without taking an impossible position, the maintenance can be performed comfortably.

[0052] Since the cleaning case 32 of cleaning equipment 14 is being fixed to the unit holder 40 in that case, cleaning equipment 14 is detached and attached to the drawer object 45 with the image support 5. Therefore, when removing the image support unit 41 from the drawer object 45 or equipping with it, as shown in drawing 3 , the opening 35 of the cleaning case 32 is covered with the peripheral face of the image support 5. For this reason, the toner within the cleaning case 32 falls from that opening 35, and does not come out it outside at a large quantity. Thus, the maintenance to the image support 5, cleaning equipment 14, and a developer 8 can be performed well, without soiling the circumference of image formation equipment with a toner.

[0053] Moreover, in the image formation equipment of this example, it is attached removable to the unit holder 40, and the image support 5 and cleaning equipment 14 are removed from the unit holder 40, and the image support 5, a cleaning blade 33, etc. are cleaned, or the image support 5 and cleaning equipment 14 are constituted so that these can be exchanged, so that it may explain below.

[0054] Since the drawer object 45 is pulled out to the near side of the body 1 of image formation equipment as mentioned above and the drawer location is stopped, the image support unit 41 is lifted up and removed. Subsequently, as shown in drawing 9 , where 180 degrees of the image support unit 41 are rotated, a top plate 42 is turned down, for example, it lays on a desk. Here each side plates 43 and 44 of the unit holder 40 It is divided into two parts, respectively. The fixed parts 43A and 44A of one of these It is formed in a top plate 42 at one, and the moving part 43B and 44B of the another side is pivoted by fixed parts 43A and 44A rotatable through the ** pin 84, and moving part 43B and 44B is usually being fixed to fixed parts 43A and 44A with two screw threads 85. Then, after laying the image support unit 41 on a desk as mentioned above, two screw threads 85 are removed, and moving part 43B and 44B is rotated as shown in drawing 10 . Thereby, it can expose outside and the image support 5 can remove the image support 5 from the unit holder 40 by raising this up as it is.

[0055] Moreover, as shown in drawing 11 , cleaning equipment 14 can be removed from the unit holder 40 by removing two another screw threads 86. Since it can work by laying the unit holder 40 on a desk etc. at this time although the opening 35 (drawing 3) of that cleaning case 32 is opened if the image support 5 is removed from the unit holder 40 as mentioned above or cleaning equipment 14 is removed from the unit holder 40, an activity can be carried out carefully and it can prevent a toner falling and coming out from that opening 35.

[0056] Furthermore, as shown in drawing 4 and drawing 5 , the hole 89 for attachment and detachment of electrification equipment 6 (drawing 3) is formed in the side plate 43 of the unit holder 40, and electrification equipment 6 can also be drawn out through the hole 89 to it. Drawing 10 and drawing 11 show the condition after drawing out electrification equipment 6.

[0057] According to the activity mentioned above and the activity of reverse, cleaning equipment 14 and the image support 5 can be attached to the unit holder 40, subsequently to the drawer object 45 the image support unit 41 can be set, the drawer object 45 can be pushed in in the body 1 of image

formation equipment, and each of that element can be positioned to a position as mentioned above. [0058] Although the image support unit 41 can be removed from the drawer object 45 or this can be attached, pulling out to the near side, making it suspend the drawer object 45 from the inside of the body 1 of image formation equipment as shown in drawing 5 , and containing a developer 8 on the drawer object 45 Where both the image support unit 41 and the developer 8 are contained and set to the drawer object 45 The developing roller of the development counter which occupied the image support 5 and a development location For example, since it has countered with the ***** gap of 1mm or less When detaching and attaching the image support unit 41 to the drawer object 45, setting a developer 8 to the drawer object 45, the element of a developer, especially a developing roller hit the front face of the image support 5, and there is a possibility that a blemish may be attached to an image support front face. In order to prevent this nonconformity, it consists of image formation equipment of this example as follows.

[0059] Although drawing 6 shows the condition that the part 87 of the developer 8 approach of the upper part of the unit holder 40 was supported on the 2nd stay 49 Horizontal level 49A in which a part 87 is laid as this 2nd stay 49 is shown also in drawing 12 , It has vertical section 49B which started almost vertically to this horizontal level 49A. To that vertical section 49B the guide piece 88 which raised the stay itself and formed it prepares -- having -- this guide piece 88 -- vertical section 49B -- receiving -- 0 degree -- large -- and 90 degrees -- smallness -- an include angle theta is made and it projects in the slanting lower part towards the part 87 of the unit holder 40.

[0060] Here, if the image support unit 41 is lifted up in order to remove the image support unit 41 supported by the 1st and 2nd stay 48 and 49 from the drawer object 45, since the part 87 of the unit holder 40 will hit the guide piece 88, the image support unit 41 rotates in the direction shown in drawing 6 by the arrow head S1 focusing on the part 87. The image support unit 41 rotates to the sense to which the image support 5 of the image support unit 41 separates from a developer 8. Thus, if the image support 5 moves the image support unit 41 to the sense estranged from a developer 8 at drawing 6 as an arrow head S2 shows, and it removes the part 87 of the unit holder 40 from the guide piece 88 in the condition of having separated from the developer 8, the image support unit 41 can be lifted up, as an arrow head S3 shows.

[0061] As mentioned above, if the image support 5 does not move the image support unit 41 to the sense which separates from a developer 8 when removing the image support unit 41 from the drawer object 45, that image support unit 41 is constituted from a drawer object 45 so that it cannot break away, for this reason, at the time of this removal activity, the image support 5 hits in the developing roller of a developer 8 strongly according to an operator's inattention, and the nonconformity by which a blemish is attached to an image support front face can be prevented.

[0062] Thus, it sets to the image formation equipment of this example. So that it may move to the sense to which the image support unit 41 separates from the developer 8 held at the drawer object 45, when removing the image support unit 41 from the drawer object 45 The guide to which it shows the image support unit 41 concerned is prepared in the drawer object 45, and the guide piece 88 prepared in the 2nd horizontal level 49A and its vertical section 49B of stay 49 constitutes the guide from an illustrated example.

[0063] And when this image support unit 41 is lifted so that this guide may remove the image support unit 41 from the drawer object 45, the image support unit 41 concerned is guided so that this image support unit 41 may rotate to the sense to which the part of that lower part separates from a developer 8 focusing on the part 87 of the developer approach of that upper part.

[0064] Moreover, as shown in drawing 3 thru/or drawing 6 , the both-sides plates 43 and 44 of the unit holder 40 are formed somewhat more greatly than the peripheral face of the image support 5, and the part constitutes the lobe 90. That is, the unit holder 40 has the lobe 90 which **** to the method of outside [peripheral face / of the image support 5]. And in the illustrated image formation equipment, the lobe 90 is constituted for the periphery section to which the unit holder 40 has the side plates 43 and 44 which support shaft-orientations each edge of the image support 5, and extends along with the image support peripheral face of these side plates 43 and 44 by the projection and its projecting periphery

section by the method of outside [peripheral face / of the image support 5].

[0065] When picking out the image support unit 41 from the drawer object 45 according to the above-mentioned configuration, setting a developer 8 to the drawer object 45, Or when attaching the image support unit 41 in the drawer object 45, even if the image support unit 41 has taken the position which is not parallel to a developer 8 Even if the lobe 90 of the unit holder 40 may hit the element of a developer 8, for example, the developing roller, the image support 5 can prevent the nonconformity by which a blemish is attached to an image support front face in the developing roller.

[0066] Moreover, the nonconformity by which, as for the front face of the image support 5, a blemish is attached to an image support front face also in this case in an installation side only by that lobe 90 hitting that installation side even if it has laid in the installation side on a desk etc., where it turned the top plate 42 upwards accidentally [operator / after removing image support YUNITSU 41 from the drawer object 45] and the image support 5 is turned downward can be prevented.

[0067] Even if the configuration of the guide mentioned above and a lobe 90 only adopts the either, it can prevent with [through which it passes image support 5 / which it will be in an image support front face if both both configurations are adopted, although it gets damaged and generating can be suppressed effectively] a blemish much more effectively.

[0068] By the way, if dust, such as a toner, adheres to the translucency protection-against-dust member 39 shown in drawing 3 and the translucency protection-against-dust member 39 is soiled, as explained also in advance, since the quantity of light from an aligner 7 to an image support front face will fall and the image quality of an image will deteriorate, it is necessary to clean the translucency protection-against-dust member 39 that the dust adhering to the translucency protection-against-dust member 39 should be removed. However, that activity will become very troublesome supposing it performs this cleaning manually.

[0069] Then, in the image formation equipment of this example, using the motion of the drawer object 45 when pulling out the above-mentioned drawer object 45 to a near side, or pushing this in, and storing in the body 1 of image formation equipment, it is constituted so that the translucency protection-against-dust member 39 can be cleaned automatically.

[0070] Drawing 13 is the explanatory view which showed the outline of the situation when seeing the aligner 7 fixed from the left of drawing 3 to the unit holder 40 and the body of image formation equipment of the image support unit 41, and expressed the casing 38 of the aligner 7 in the cross section. As shown in this drawing, the translucency protection-against-dust member 39 fixed to casing 38 was prolonged for a long time in parallel in the direction B of a drawer of the image support unit 41, and it was fixed to casing 38 by the mounting members 93 and 94, and it has covered the opening 92 of casing 38 by them. In this example, although the translucency protection-against-dust member 39 is being fixed to casing 38, the translucency protection-against-dust member 39 may be attached in the same direction as the direction B of a drawer of the drawer object 45 withdrawal to casing 38 at that casing 38.

[0071] As shown in drawing 3 thru/or drawing 5 , and drawing 13 , it is a part by the side of the back of the unit holder 40, and the cleaner 95 for protection-against-dust members which consists of elasticity foam, cloth, or a hair transplantation object was fixed to the location which counters the translucency protection-against-dust member 39, and the front face of the cleaner 95 for protection-against-dust members is in contact with lateral-surface 39A which turned to the exterior of the translucency protection-against-dust member 39.

[0072] Here, if it pulls out to the near side which shows the drawer object 45 which is not shown to drawing 13 by the arrow head B, the cleaner 95 for protection-against-dust members attached in this also moves with the drawer object 45, and at this time, the cleaner 95 for protection-against-dust members will **** to lateral-surface 39A of the translucency protection-against-dust member 39, and will clean that lateral-surface 39A. Drawing 14 shows the situation when the drawer object 45 is most pulled out by the near side, and the cleaner 95 for protection-against-dust members is separated from the translucency protection-against-dust member 39 at this time. If the drawer object 45 is stuffed into a back side as an arrow head C shows, the cleaner 95 for protection-against-dust members will clean this again in slide contact with lateral-surface 39A of the translucency protection-against-dust member 39.

[0073] As mentioned above, the image formation equipment of this example pulls out the drawer object 45 from the inside of the body 1 of image formation equipment to a near side, or when pushing in in the body 1 of image formation equipment and containing, it moves in connection with a motion of the drawer object 45, and the cleaner 95 for protection-against-dust members which cleans the translucency protection-against-dust member 39 of the aligner 7 formed in the body side of image formation equipment is formed. According to this configuration, only by taking the drawer object 45 in and out, the translucency protection-against-dust member 39 can be cleaned, independent cleaning can be excluded, and the maintenance nature of image formation equipment can be raised remarkably. In the illustrated example, although the cleaner 95 for protection-against-dust members was fixed to the unit holder 40 of the image support unit 41, you may fix to the drawer object 45.

[0074] The above-mentioned cleaner 95 for protection-against-dust members makes the business which cleans lateral-surface 39A of the translucency protection-against-dust member 39. Although this cleaner 95 for protection-against-dust members may only be formed, in the illustrated example, other cleaner 95A for protection-against-dust members which cleans medial-surface 39B of the translucency protection-against-dust member 39 which turned to the interior of casing 38 is prepared. This cleaner 95A for protection-against-dust members also consisted of elasticity foam, cloth, or a hair transplantation object, and is in contact with medial-surface 39B of the translucency protection-against-dust member 39. Thus, when pulling out the drawer object 45 from the inside of the body 1 of image formation equipment to a near side, or pushing in in the body of image formation equipment and containing, In connection with a motion of the drawer object 45, as a cleaner for protection-against-dust members which cleans the translucency protection-against-dust member 39 of the aligner 7 formed in the body 1 side of image formation equipment At least two protection-against-dust member cleaners which clean lateral-surface 39A which turned to the exterior of the translucency protection-against-dust member 39, and medial-surface 39B which turned to the interior of casing 38, respectively are formed. According to this configuration, the dust adhering to medial-surface 39B of the translucency protection-against-dust member 39 is also removable, and even if it does not perform cleaning the translucency protection-against-dust member 39 became independent of, an always quality image can be formed.

[0075] As mentioned above, while attaching in the image support unit 41 or the drawer object 45 the cleaner 95 for protection-against-dust members which cleans lateral-surface 39A of the translucency protection-against-dust member 39 in that case When pulling out the drawer object 45 from the inside of the body 1 of image formation equipment to a near side, or pushing in in the body of image formation equipment and containing, By establishing a interlocking means to interlock and to move cleaner 95A for protection-against-dust members which cleans medial-surface 39B of the translucency protection-against-dust member 39 to a motion of the drawer object 45 According to a motion of the drawer object 45, cleaner 95A for protection-against-dust members can be moved, and medial-surface 39B of the translucency protection-against-dust member 39 can be cleaned certainly. Below, the example of the interlocking means is clarified.

[0076] As shown in drawing 3 and drawing 13 , the cleaner 95 for protection-against-dust members (the 1st cleaner for protection-against-dust members is called hereafter if needed) which cleans lateral-surface 39A of the translucency protection-against-dust member 39 is being fixed to the unit holder 40 through the magnet 96. Moreover, cleaner (similarly 2nd cleaner for protection-against-dust members is called if needed) 95A for protection-against-dust members which cleans medial-surface 39B of the translucency protection-against-dust member 39 counters the 1st cleaner 95 for protection-against-dust members through the translucency protection-against-dust member 39, and the magnetic substance 97 is being fixed to the rear-face side. Here, if it pulls out to the near side which shows the drawer object 45 which is not shown to drawing 13 by the arrow head B with the image support unit 41, the 1st cleaner 95 for protection-against-dust members will clean the lateral surface of the translucency protection-against-dust member 39 as mentioned above. Since a magnet 96 and the magnetic substance 97 are being fixed to that 1st cleaner 95 for protection-against-dust members, and 2nd cleaner 95 for protection-against-dust members A, respectively at this time, by the magnetism which acts among those both, 2nd cleaner 95A for protection-against-dust members moves in the direction of arrow-head B with the 1st cleaner 95 for

protection-against-dust members, and cleans medial-surface 39B of the translucency protection-against-dust member 39.

[0077] If 2nd cleaner 95A for protection-against-dust members reaches the near-side edge of the translucency protection-against-dust member 39, as shown in drawing 14 , it will stop in a stopper and the stopper constituted from an example of drawing by the mounting member 93. on the other hand, the 1st cleaner 95 for protection-against-dust members was shown in drawing 14 with the drawer object 45 - it moves to the location of a near side most.

[0078] Subsequently, if the drawer object 45 is stuffed into a back side as an arrow head C shows, and the 1st cleaner 95 for protection-against-dust members counters 2nd cleaner 95A for protection-against-dust members, by the magnetism committed between a magnet 96 and the magnetic substance 97, 2nd cleaner 95A for protection-against-dust members will be taken to the 1st cleaner 95 for protection-against-dust members, and will be returned to the location shown in drawing 13 . Also at this time, as for 2nd cleaner 95A for protection-against-dust members, medial-surface 39B of the translucency protection-against-dust member 39 is cleaned.

[0079] As mentioned above, in the example shown in drawing 3 , drawing 13 , and drawing 14 , a magnet 96 and the magnetic substance 97 constitute the above-mentioned interlocking means, and by magnetism, this interlocking means interlocks and moves 2nd cleaner 95A for protection-against-dust members to a motion of the drawer object 45. A magnet may be fixed to the 2nd cleaner 95A side for protection-against-dust members, the magnetic substance may be fixed to the direction of the 1st cleaner 95 for protection-against-dust members, and a magnet may be fixed to both of the 1st and 2nd cleaners 95 and 95A for protection-against-dust members.

[0080] Drawing 15 thru/or drawing 21 show other examples of the above-mentioned interlocking means. Drawing 15 is drawing equivalent to drawing which expanded a part of drawing 3 , and drawing 16 thru/or drawing 21 are drawings equivalent to drawing 13 and drawing 14 .

[0081] Although the 1st cleaner 95 for protection-against-dust members is being fixed to the unit holder 40 like the 1st cleaner for protection-against-dust members shown in drawing 13 and drawing 14 as shown in drawing 15 , in the example of drawing 15 , the 1st cleaner 95 for protection-against-dust members is being soon fixed to the unit holder 40.

[0082] It fits into the slit 99 which end face section 98A of flat spring 98 was fixed to 2nd cleaner 95 for protection-against-dust members A which counters the 1st cleaner 95 for protection-against-dust members, and is located through the translucency protection-against-dust member 39, and this flat spring 98 was formed in the casing 38 of an aligner 7, and was prolonged for a long time along with the translucency protection-against-dust member 39 free [sliding], and that free edge 98B projects in the exterior of casing 38.

[0083] Although the image support unit 41 contained by the drawer object shows the condition of having occupied the location by the side of the very back within the body of image formation equipment, drawing 16 If it begins to lengthen to a near side as an arrow head B shows this image support unit 41 to drawing 16 with the drawer object 45 which is not shown, as shown in drawing 17 The application-of-pressure section 100 which consists of the projection which protruded on the unit holder 40 of the image support unit 41 presses this in free edge 98B of flat spring 98. For this reason, flat spring 98 moves in the direction of arrow-head B with 2nd cleaner 95A for protection-against-dust members which contacted medial-surface 39B of the translucency protection-against-dust member 39, and 2nd cleaner 95A for protection-against-dust members cleans medial-surface 39B. At this time, it is as having explained previously that the 1st cleaner 95 for protection-against-dust members which is not shown in drawing 16 thru/or drawing 21 cleans lateral-surface 39A of the translucency protection-against-dust member 39.

[0084] While the drawer object 45 moves in the direction of arrow-head B further in the image support unit 41 although it stops in the stopper constituted by the mounting member 93 when the edge of the near side of the translucency protection-against-dust member 39 was reached, as cleaner 95 for protection-against-dust members of ** 2nd A showed drawing 18 , and the application-of-pressure section 100 carries out elastic deformation of the flat spring 98 at this time, that flat spring 98 is

overcome. Drawing 19 shows the condition that did in this way and the drawer object 45 was most pulled out by the location of a near side.

[0085] Subsequently, if it begins to stuff the drawer object 45 holding the image support unit 41 into a back side (the direction of arrow-head C) as shown in drawing 20 , the application-of-pressure section 100 presses flat spring 98, and while 2nd cleaner 95A for protection-against-dust members also ****s to medial-surface 39B of the translucency protection-against-dust member 39 by this, it will move to a back side. At this time, the 1st cleaner 95 for protection-against-dust members also moves in the same direction. And as shown in drawing 21 , 2nd cleaner 95A for protection-against-dust members reaches the edge by the side of the back of the translucency protection-against-dust member 39, if it stops in the stopper constituted by the mounting member 94, the application-of-pressure section 100 will overcome the flat spring 98, carrying out elastic deformation of the flat spring 98, and the image support unit 41 held at the drawer object 45 will stop it in the location by the side of the very back shown in drawing 16 .

[0086] Flat spring 98 and the application-of-pressure section 100 constitute the above-mentioned interlocking means from an example shown in drawing 15 thru/or drawing 21 .

[0087] By the way, the electrification equipment 6 used in the image-formation equipment of this example is constituted as a corona-discharge machine which consists of the case 101 which consists of the electric-conduction plate mutually prolonged in parallel, the insulating end block 102,103 fixed to longitudinal direction each edge of the case 101, the charging wire 104 stretched among these end blocks, and the grid 105 prepared in the lower part of a case 101, as shown in drawing 3 and drawing 22 . This corona discharge machine is attached to the unit holder 40, when that the end block 102,103 of each fits into the mounting holes 89 and 89A formed in each side plates 43 and 44 of the unit holder 40 as shown in drawing 23 . Thus, the electrification equipment 6 which consists of the corona discharge machine which has charging wire 104, and the image support 5 are attached to the unit holder 40, and the image support unit 41 is constituted. In this condition, high tension is impressed to charging wire 104 at the time of image formation actuation, and an image support front face is charged by discharge which this produces.

[0088] If the charging wire 104 becomes dirty when a corona discharge machine is used as electrification equipment 6 as mentioned above, electrification unevenness will be made on an image support front face, and the image quality of an image will deteriorate. For this reason, although it is necessary to clean charging wire 104, it is troublesome to clean charging wire 104 manually also in this case.

[0089] Then, in the image formation equipment of this example, it is constituted so that charging wire 104 can be cleaned with actuation of the drawer object 45 also in this case. That is, as shown in drawing 3 thru/or drawing 4 , and drawing 23 , the direction of an axis of the image support 5, i.e., the drawer of the drawer object 45, and the opening 106 prolonged for a long time in the pushing direction are formed in the top plate 42 of the unit holder 40, and this opening 106 is closed with the lid 107 which fitted in free [attachment and detachment] here.

[0090] Two slits 108 prolonged for a long time were formed in the longitudinal direction, and each leg of a slider 109 has fitted into a lid 107 free [sliding] at these slits 108. The upper bed section holding the cleaner 110 for wires of the cleaner holder 111 is being fixed to the soffit of the biped section of a slider 109. The cleaner 110 for wires also consists of elasticity foam, cloth, etc., is located in the case 101 of electrification equipment 6, and encloses charging wire 104. A slit 113 is formed in the cleaner 110 for wires, and charging wire 104 is inserted in the interior of the cleaner 110 for wires through this slit 113. Moreover, the end face section of flat spring 112 is being fixed to the top face of a slider 109. A slider 109, the cleaner 110 for wires, the cleaner holder 111, and flat spring 112 constitute the one cleaner unit 114.

[0091] Drawing 23 shows the situation when the drawer object 45 which is not illustrated and the image support unit 41 held in this are stuffed into the back side within the body 1 of image formation equipment and is held here, and the cleaner 110 for wires is located in the part of the near side of charging wire 104 at this time. Since flat spring 112 hits the edge (also see drawing 5) of the propleuron

59 of the body 1 of image formation equipment as it is shown in after that and drawing 24 , although the cleaner unit 114 will also move only a little between to a near side in the drawer object 45 if it pulls out to the near side which showed the drawer object 45 by the arrow head B in the image support unit 41 here, the cleaner unit 114 is stopped in this location. On the other hand, the drawer object 45 is succeedingly pulled out by the near side, and moves relatively in the inside of the slit 108 by which the slider 109 was formed in the lid 107 at this time. Thus, charging wire 104 passes through the inside of the cleaner 110 for wires, and charging wire 104 is cleaned by the cleaner 110 for wires at this time. [0092] Then, if the drawer object 45 is lengthened to a near side, as shown in drawing 25 , as for the cleaner unit 114, a slider 109 will be lengthened by this with the image support unit 41 in the edge by the side of the back of a lid 107 to a near side. At this time, flat spring 112 carries out elastic deformation also of the twist in response to big external force till then from the propleuron 59 of the body 1 of image formation equipment, and the cleaner unit 114 passes a propleuron 59. The condition when the drawer object 45 which carries out drawing 26 in this way, and are not indicated to be the cleaner unit 114 and the image support unit 41 here is pulled out most to a near side is shown (also see drawing 4 and drawing 5).

[0093] Next, if it begins to push in the drawer object 45 in the back side of arrow-head C, i.e., the direction, the cleaner unit 114 will move only a little between to a back side with the image support unit 41, but as flat spring 112 shows immediately drawing 27 , the cleaner unit 114 is stopped in the side face before a propleuron 59. On the other hand, since the drawer object 45 and the image support unit 41 move to a back side succeedingly, as for charging wire 104, it passes through the inside of the cleaner 110 for wires also at this time, and the dirt of charging wire 104 is removed.

[0094] Subsequently, as shown in drawing 28 , according to the big external force which flat spring 112 receives from the propleuron 59 of the body 1 of image formation equipment, elastic deformation is carried out, the cleaner unit 114 passes the propleuron 59, it moves to a back side with the image support unit 41, and the cleaner unit 114 stops [in / in a slider 109 / the edge of the near side of a lid 107 / the image support unit 41 and the cleaner unit 114 reach the location by the side of the back shown in drawing 23 , and] here.

[0095] As mentioned above, it sets to the image formation equipment of this example. Attach the electrification equipment 6 which consists of the image support 5 and a corona discharge machine to the unit holder 40, and the image support unit 41 is constituted. This image support unit 41 and the above-mentioned developer 8 are held on the drawer object 45 supported withdrawal to the body 1 of image formation equipment. When pulling out the drawer object 45 from the inside of the body 1 of image formation equipment to a near side, or pushing in in the body of image formation equipment and containing, In connection with the motion of the drawer object 45, the cleaner 110 for wires which moves relatively [longitudinal direction / the] to charging wire 104, and cleans the charging wire 104 concerned is formed in the unit holder 40. By this configuration, at the time of the drawer of the drawer object 45, or pushing actuation, charging wire 104 can be cleaned automatically and the maintenance nature of image formation equipment can be raised certainly.

[0096] In the illustrated example, although the cleaner 110 for wires was attached to the unit holder 40 through the slider 109, the cleaner holder 111, and the lid 107, the cleaner for wires can also be soon formed in the unit holder 40 through other elements.

[0097] Moreover, a grid 105 is also cleaned by that cleaner 110 for wires, when the cleaner 110 for wires also touches the grid 105 and the cleaner 110 for wires cleans charging wire 104 as mentioned above for this reason, as shown in drawing 23 thru/or drawing 28 although the corona discharge machine which constitutes the electrification equipment 6 of this example has the grid 105 as mentioned above. When the cleaner 110 for wires moves relatively to charging wire 104, the configuration of the cleaner 110 for wires concerned is set up so that this cleaner 110 for wires may clean this grid 105 in slide contact with a grid 105. Thereby, a grid 105 can also be cleaned automatically.

[0098] In addition, when removing electrification equipment 6 from the unit holder 40 as mentioned above, as shown in drawing 29 , a lid 107 is lifted up and the cleaning unit 114 is removed from the unit holder 40. Since the slit 113 is formed in the cleaner 110 for wires at this time, that cleaner 110 for wires

can be made to separate from charging wire 104 easily. In this condition, electrification equipment 6 can be drawn out from the unit holder 40 through a mounting hole 89 as mentioned above.

[0099] Moreover, if the cleaner 110 for wires of the cleaning unit 114 is inserted from the opening 106 of the unit holder 40 and a lid 107 is made to agree in opening 106 after inserting electrification equipment 6 in the unit holder 40, charging wire 104 will be inserted in the slit 113 of the cleaner 110 for wires. At this time, if the notching 114 opened in the slit lower part of the cleaner 110 for wires at the bottom is formed as shown in drawing 29 so that that insertion can be performed easily, it is advantageous.

[0100] This invention can apply not only to color-picture formation equipment but to image-formation equipments, such as the image-formation equipment which forms a monochrome visible image, and a printer, facsimile or a compound machine, widely, and can apply widely to the image-formation equipment which imprints soon the toner image further formed in the image support front face to the last imprint material, without imprinting on a medium imprint object, the image-formation equipment using the aligner which carries out image formation of the manuscript image to an image support front face soon, etc.

[0101]

[Effect of the Invention] An image support unit can be detached and attached easily, and since according to image formation equipment according to claim 1 image support was attached to the unit holder, the image support unit was constituted and the image support unit and developer were held on the drawer object supported withdrawal to the body of image formation equipment, maintenance nature can be raised. And with the cleaner for protection-against-dust members which moves in connection with a motion of a drawer object, since the translucency protection-against-dust member of an aligner can be cleaned automatically, the maintenance nature of image formation equipment can be raised further.

[0102] According to image formation equipment according to claim 2, the lateral surface and medial surface of a translucency protection-against-dust member can both be cleaned automatically, and the dirt of a translucency protection-against-dust member can be prevented much more certainly.

[0103] According to image formation equipment according to claim 3, the cleaner for protection-against-dust members can clean certainly the medial surface of a translucency protection-against-dust member.

[0104] An image support unit can be detached and attached easily, and since according to image formation equipment according to claim 4 image support was attached to the unit holder, the image support unit was constituted and the image support unit and developer were held on the drawer object supported withdrawal to the body of image formation equipment, maintenance nature can be raised. And since the cleaner for wires can clean charging wire automatically in connection with a motion of a drawer object, the maintenance nature of image formation equipment can be raised further.

[0105] According to image formation equipment according to claim 5, the cleaner for wires can also clean a grid automatically.

[Translation done.]

* NOTICES *

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is approximate account drawing having shown the internal structure of image formation equipment from the transverse-plane side.

[Drawing 2] It is the expanded sectional view showing the detail of the developer shown in drawing 1.

[Drawing 3] It is the sectional view showing the relative-position relation of an aligner with the image support which constitutes an image support unit, cleaning equipment, and a unit holder.

[Drawing 4] It is the perspective view of an image support unit.

[Drawing 5] It is the perspective view showing the condition of having pulled out the drawer object to the near side of the body of image formation equipment, and having removed an image support unit and one development counter from the drawer object.

[Drawing 6] It is the fragmentary sectional view showing the relative-position-related outline of a drawer object and the image support unit supported by this.

[Drawing 7] It is a horizontal sectional view when pushing in a drawer object in the body of image formation equipment.

[Drawing 8] It is drawing explaining the attachment condition of the 1st and 3rd stay and a movable guide rail.

[Drawing 9] It is the perspective view showing signs that the image support unit removed from a drawer object is laid on an installation side.

[Drawing 10] It is the perspective view showing the situation when removing image support from a unit holder.

[Drawing 11] Furthermore, it is the perspective view showing signs that cleaning equipment is removed from a unit holder.

[Drawing 12] It is the perspective view which clarifies the guide piece prepared in the 2nd stay.

[Drawing 13] It is drawing which is a schematic diagram when seeing an aligner and an image support unit, and expressed casing of an aligner from the left of drawing 3 in the cross section.

[Drawing 14] It is the same drawing as drawing 13 when pulling out a drawer object to a near side.

[Drawing 15] It is drawing equivalent to the part drawing of drawing 3 showing the example of other interlocking means.

[Drawing 16] It is the same schematic diagram as drawing 13 seen from the left of drawing 15.

[Drawing 17] It is drawing explaining an operation of the interlocking means shown in drawing 16.

[Drawing 18] It is drawing explaining an operation of the interlocking means shown in drawing 16.

[Drawing 19] It is drawing explaining an operation of the interlocking means shown in drawing 16.

[Drawing 20] It is drawing explaining an operation of the interlocking means shown in drawing 16.

[Drawing 21] It is drawing explaining an operation of the interlocking means shown in drawing 16.

[Drawing 22] It is the perspective view of the electrification equipment which consists of a corona discharge machine.

[Drawing 23] The corona discharge machine shown in drawing 22 is the sectional view showing the condition of having been attached to the unit holder.

[Drawing 24] It is a sectional view explaining an operation in case the charging wire of the corona discharge machine shown in drawing 23 is cleaned.

[Drawing 25] It is a sectional view explaining an operation in case the charging wire of the corona discharge machine shown in drawing 23 is cleaned.

[Drawing 26] It is a sectional view explaining an operation in case the charging wire of the corona discharge machine shown in drawing 23 is cleaned.

[Drawing 27] It is a sectional view explaining an operation in case the charging wire of the corona discharge machine shown in drawing 23 is cleaned.

[Drawing 28] It is a sectional view explaining an operation in case the charging wire of the corona discharge machine shown in drawing 23 is cleaned.

[Drawing 29] It is the sectional view showing the situation when removing a cleaner unit from a unit holder.

[Description of Notations]

1 Image Formation Equipment

5 Image Support

6 Electrification Equipment

7 Aligner

8 Developer

38 Casing

39 Translucency Protection-Against-Dust Member

39A Lateral surface

39B Medial surface

40 Unit Holder

41 Image Support Unit

45 Drawer Object

92 Opening

95 Cleaner for Protection-Against-Dust Members

95A The cleaner for protection-against-dust members

104 Charging Wire

105 Grid

110 Cleaner for Wires

L Light

[Translation done.]

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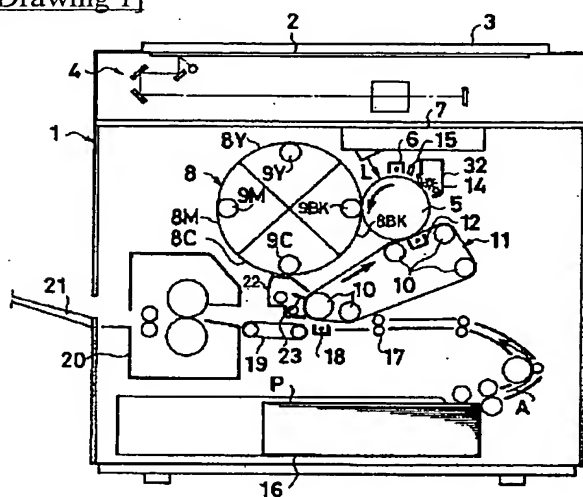
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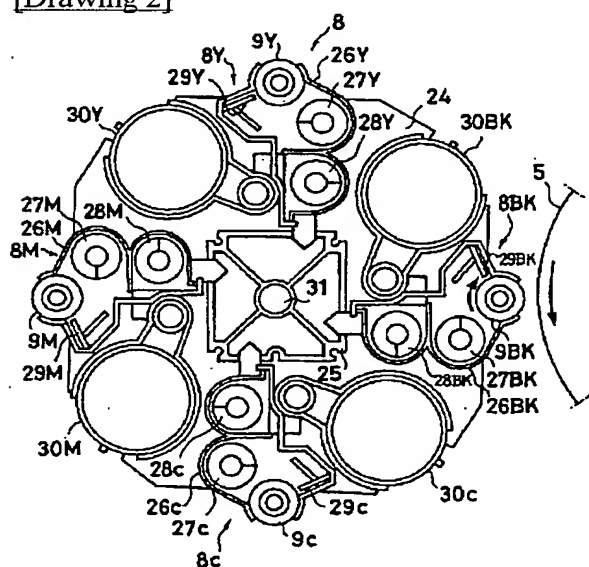
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DRAWINGS

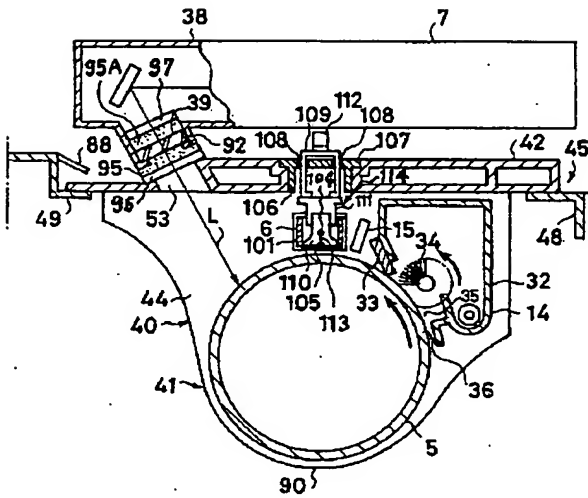
[Drawing 1]



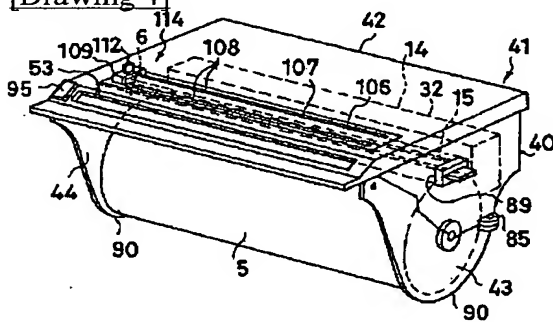
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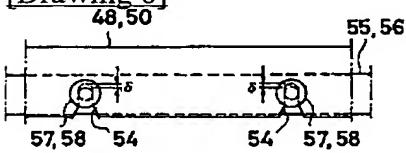
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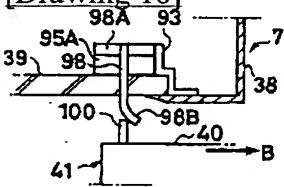
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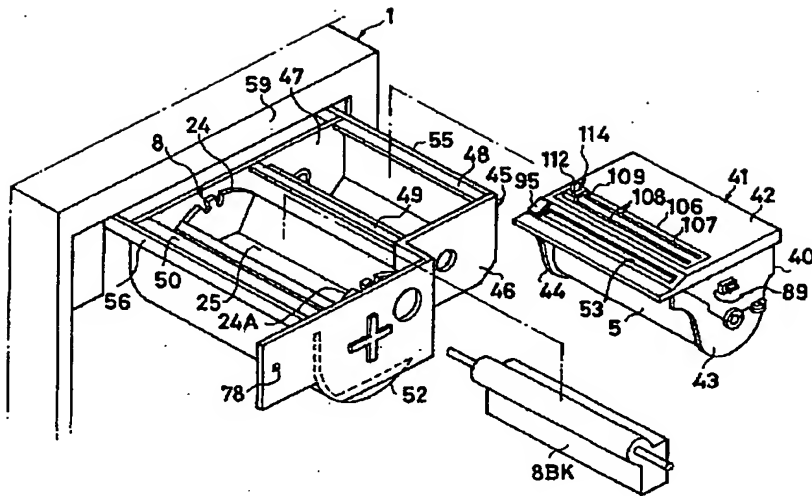
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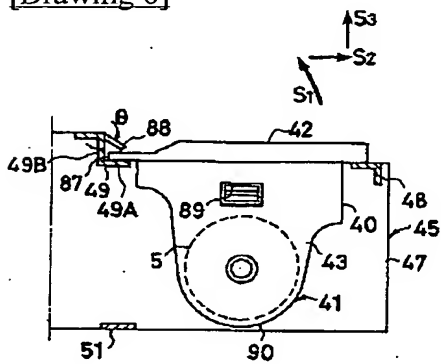
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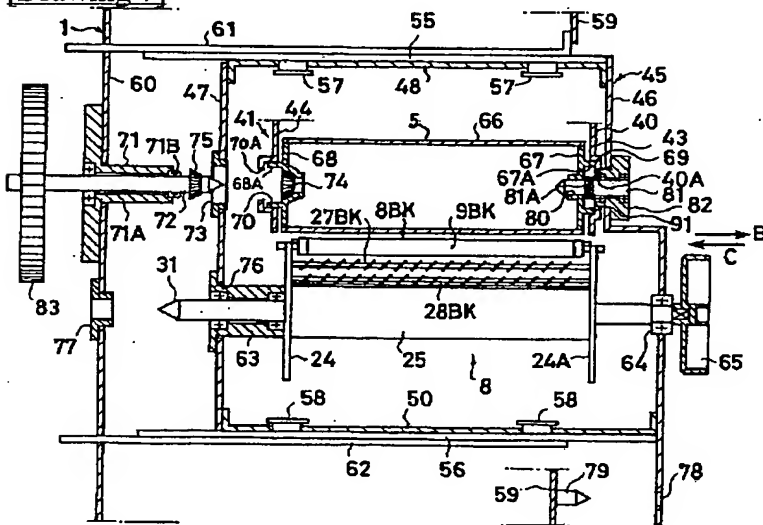
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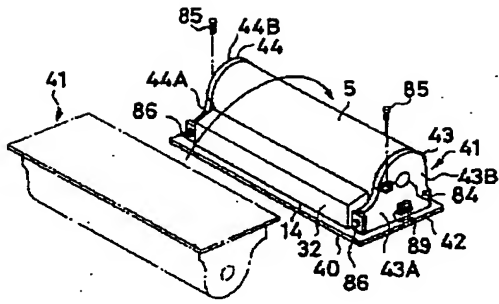
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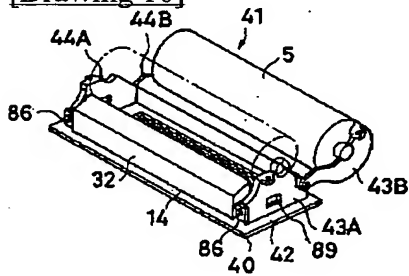
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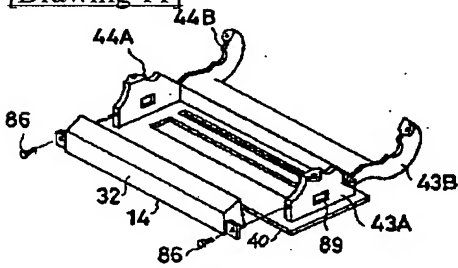
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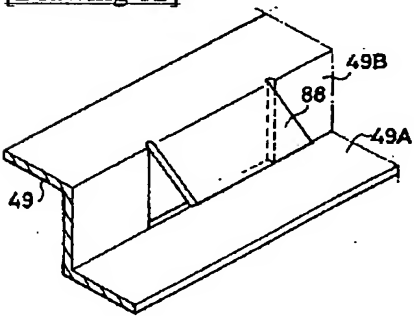
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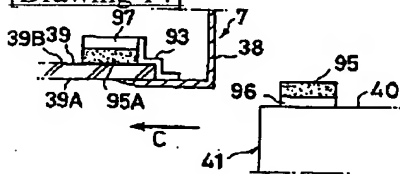
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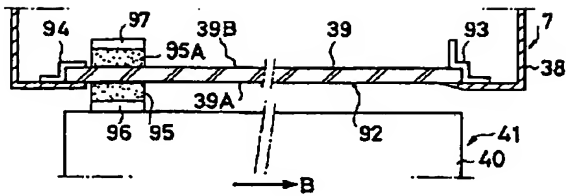
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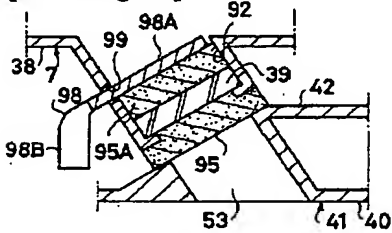
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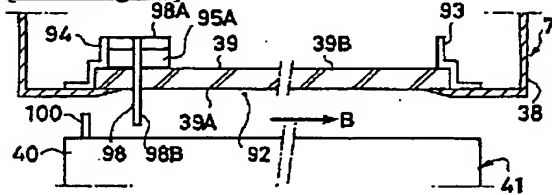
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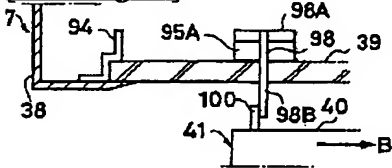
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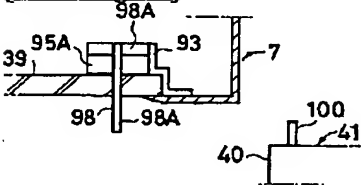
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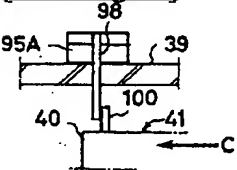
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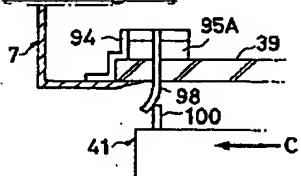
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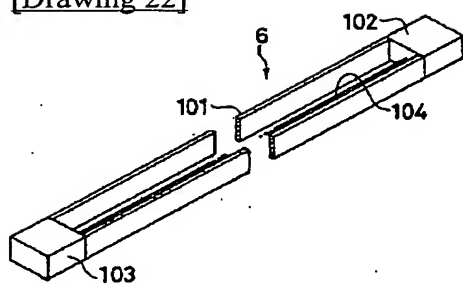
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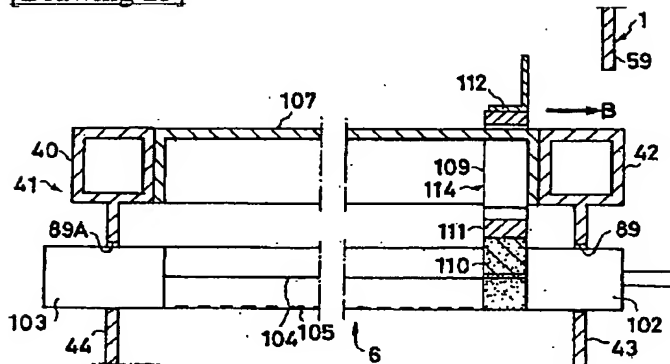
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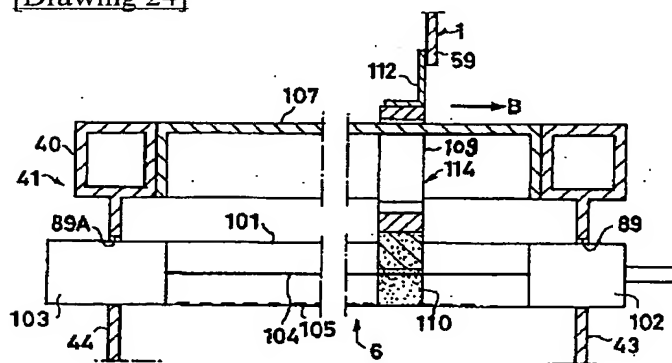
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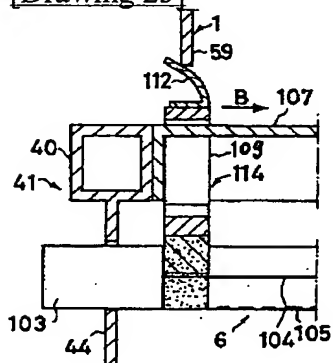
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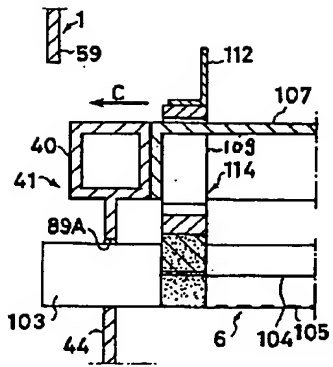
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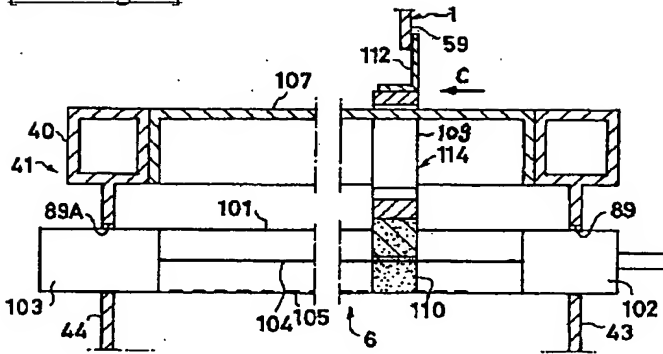
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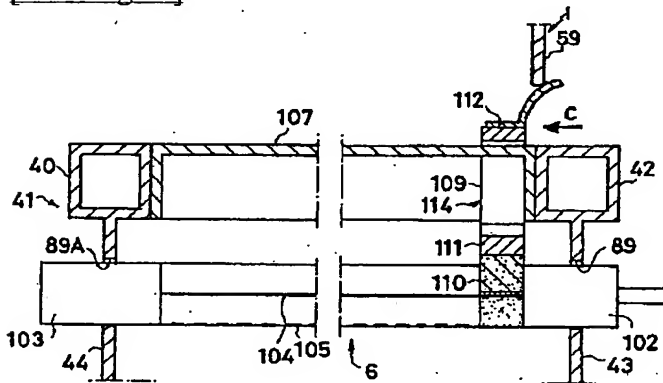
[Drawing 26]



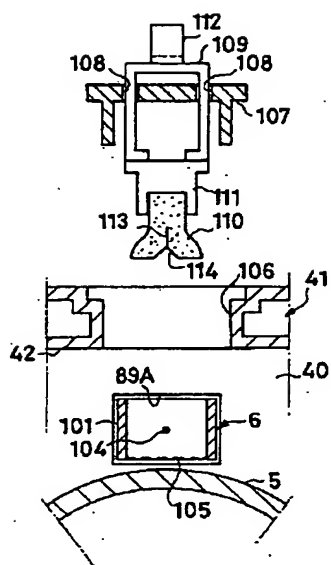
[Drawing 27]



[Drawing 28]



[Drawing 29]



[Translation done.]